



NOTES

DERMATITIS & ECZEMA

GENERALLY, WHAT ARE THEY?

PATHOLOGY & CAUSES

- Inflammatory skin disorders
- Immune-mediated skin damage

SIGNS & SYMPTOMS

- Rashes
 - Pruritus (itching), burning, pain

DIAGNOSIS

LAB RESULTS

- Skin biopsy, blood tests

OTHER DIAGNOSTICS

- Rash
 - Appearance, distribution

TREATMENT

MEDICATIONS

- Corticosteroids
- Immunosuppressants

ATOPIC DERMATITIS (ECZEMA)

osms.it/atopic-dermatitis

PATHOLOGY & CAUSES

- Allergic, inflammatory skin condition
- Common for children; may affect adults
- Associated with **elevated serum IgE** levels
 - **Atopy**: predisposition to IgE antibody release after trigger exposure

Type 4 hypersensitivity

- Primary immune dysfunction
 - T cell subset imbalance → Th2 predominance → increased inflammatory cytokine production (IL-4, 5, 13) → increased release of IgE from plasma B-cells, recruitment of mast cells, eosinophils

TYPES

Type 1 hypersensitivity

- Epidermal barrier dysfunction
 - Skin barrier defects (e.g. filaggrin mutation) → antigen entry → inflammatory cytokines

RISK FACTORS

- Family history of atopy (eczema, asthma, allergic rhinitis)
- Environmental allergen sensitivities
- **Loss of function mutation in filaggrin gene** (skin barrier function)

VISIT...

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- Higher incidence in urban populations, high-income countries
- Low levels of early life exposure to endotoxin (immunogenic component of gram-negative bacteria)

COMPLICATIONS

- Skin infections
 - *Staphylococcus aureus* common commensal organism → impetigo
- Eczema herpeticum
 - Rapid spread of herpes simplex virus on affected skin
- Social stigma, anxiety

SIGNS & SYMPTOMS

- Acute
 - Pruritic erythematous papules, vesicles with exudate, crusting
- Chronic
 - Dry, excoriated erythematous papules with scaling; lichenification (hyperplasia)
- Dry skin
- Pruritus → chronic scratching → skin thickening, increased infection risk
- Cutaneous hyperreactivity to environmental antigens/stimuli (e.g. stress)
- 0–2 years old
 - Erythematous, pruritic, scaly, crusted lesions +/- vesicles, serous exudate
 - Extensor surfaces, cheeks, scalp
- 2–16 years old
 - Lichenified plaques (thickened epidermis)
 - Flexural distribution (e.g. antecubital, popliteal fossae); volar aspect of wrists, ankles, neck
- Adults
 - Localized lichenified plaques
 - Flexural surface involvement
 - Uncommonly involves face/neck/hands

DIAGNOSIS

LAB RESULTS

- Elevated level of Serum IgE

OTHER DIAGNOSTICS

- Morphology, distribution of lesions

United Kingdom working group atopic dermatitis criteria

- Mandatory
 - Evidence of pruritic skin with rubbing/scratching
- ≥ three following criteria
 - Skin crease involvement (antecubital fossa, popliteal fossae, neck, around eyes, ankles)
 - History/first degree relative with asthma/hay fever
 - Dry skin in past year
 - < two years old before symptoms arose (not applicable to children < four years old)
 - Visible dermatitis of flexural surfaces (< four years old → examine cheeks, forehead, outer aspects of extremities)



Figure 2.1 Atopic dermatitis affecting the flexural surfaces of the forearms.

TREATMENT

MEDICATIONS

- Control pruritus
 - Antihistamines
 - Topical calcineurin inhibitors (tacrolimus ointment, pimecrolimus cream)
 - Antibiotics to treat associated skin infections
- Immune suppression
 - Topical → systemic corticosteroids

- Topical calcineurin inhibitors
- Oral cyclosporine
- Dupilumab (IL-4 receptor antagonist)

OTHER INTERVENTIONS

- Reduce exposure to environmental allergens
- Avoid triggers
 - Heat, low humidity
- Manage stress/anxiety

- Maintain skin hydration
 - Thick, unscented creams with low water content/ointments without water
 - Apply after bathing/hand washing
 - Avoid lotions with high water/low oil content (evaporation dries out skin, triggers outbreak)
- Control pruritus
 - Prevent scratching; keep fingernails short (esp. young children)

CONTACT DERMATITIS

osms.it/contact-dermatitis

PATHOLOGY & CAUSES

- Inflammation of skin after contact exposure to allergens/irritants
- Localized
- Exposure to foreign substance triggers immune response
- Most common form: irritant contact dermatitis

CAUSES

- Exposure to irritant (irritation may be mechanical/chemical/physical)
 - Acute: strong irritant
 - Chronic: recurring exposure to weak irritant
- Detergents, surfactants, extreme pH, organic solvents, water
 - Altered epidermal barrier function: Fat emulsion → defatting of dermal lipids → cellular damage to epithelium → DNA damage, transepidermal water loss → cytotoxic cell damage → cytokine release from keratinocytes → activation of innate immunity
- Plants with spines/irritant hairs
- Low humidity
 - Skin loses moisture more easily

Allergic contact dermatitis

- Anacardiaceae family plants
 - Poison ivy, poison oak, poison sumac
- Nickel, fragrances, dyes
 - Induction phase: immune system primed for allergic response to antigen
 - Elicitation phase: contact allergens are typically haptens → small, can cross stratum corneum of skin to associate with epidermal proteins → form complete reactive antigen → dendritic cells recognise antigen → internalise antigen, transport to lymph nodes → present to T lymphocytes → trigger immune response → cell mediated immune response (Type IV delayed hypersensitivity) → memory cells remain within skin. Future exposure → triggers memory cells → immune response (cytokines, chemokines, TNF, lymphocytes, granulocytes migrate)

RISK FACTORS

- Age
 - Infants: highest risk
 - > 65 years old: lowest risk
- Body site exposure
 - Difference in thickness of stratum corneum, barrier function
 - Face, dorsum of hands, finger webs are prone to irritation
- Atopy

- Chronically impaired barrier function
- Occupational exposure
 - Continuous moisture exposure, repeated cycles of wet-to-dry from frequent handwashing
- Allergic contact dermatitis
 - Occupation (health professionals, chemical industry, beauticians, hairdressers, machinists, construction)
 - Increases with age
 - History of atopic dermatitis

SIGNS & SYMPTOMS

- Erythematous rash (can develop ≤ 72 hrs after exposure)
- Vesicles/bullae/wheals occur at exposure site
- Glaze/parched/scaled presentation
- Scaling, hyperkeratosis, fissuring
- Itching (favors allergic etiology); burning (favors irritant)



Figure 2.2 Contact dermatitis secondary to poison ivy exposure.

DIAGNOSIS

OTHER DIAGNOSTICS

- History of possible exposure to irritant/allergen
- Patch allergen testing

TREATMENT

MEDICATIONS

- Pruritus
 - Calamine lotion
- Mild topical corticosteroid (hydrocortisone)
- Oral antihistamine
- Allergic contact dermatitis
 - High potency topical corticosteroids
 - Oral corticosteroids
 - Topical calcineurin inhibitors (tacrolimus/pimecrolimus)
 - Systemic immunosuppression (azathioprine, mycophenolate mofetil, cyclosporine)

OTHER INTERVENTIONS

- Remove/avoid trigger
- Treat blistering
 - Cold compress
- Avoid scratching
- Retain moisture, protect skin
 - Barrier cream (e.g. zinc oxide)
- Irritant contact dermatitis
 - Mild acidic solutions (e.g. acetic acid) may neutralize alkali irritants/vice versa
 - Emollients (e.g. Aquaphor)
 - Gloves
- Allergic contact dermatitis
 - Phototherapy (narrow band UVB radiation)

SEBORRHOEIC DERMATITIS

osms.it/seborrhoeic-dermatitis

PATHOLOGY & CAUSES

- Sebaceous gland-centered skin inflammation
- Response to fungal antigens/irritants
- Chronic/relapsing
- Typically mild form of dermatitis

CAUSES

- Occurs in sites with greater density of sebaceous glands
- Not a disease of sebaceous glands, nor increased sebum production
- Suspected connection to lipid-dependent fungal genus *Malassezia*
 - Immune response to fungus
 - Local irritants produced by fungus
- Children
 - Nutritional deficiencies of biotin, pyridoxine (vitamin B₆), riboflavin (vitamin B₂)

RISK FACTORS

- Age (biphasic incidence: 2–12 months of age to adolescence; adulthood: peaks 30s–40s)
- Hyperandrogenism
- Biological males > biological females
- HIV
- Parkinson's
- Stress
- Cold, dry weather
- Sleep deprivation
- Poor general health

SIGNS & SYMPTOMS

- Scaling erythematous plaques
- Scales yellow, oily in appearance

Distribution

- Areas containing significant number of sebaceous glands
 - External ear, center of face, upper trunk, areas where skin rubs together
- Scalp
 - Infants: aka cradle cap; self-resolving
 - Adults: aka dandruff (pityriasis sicca); mildest form
 - Fine, white scaliness without erythema +/- pruritus
 - Severe cases: inflammation; patchy orange plaques with yellow, oily scales (pityriasis steatoides); may progress to oozing/crusting fissures affecting outer canal, concha of ear (vulnerable to superinfection)
- Face
 - Forehead, eyebrows, glabella, nasolabial folds; may affect cheeks/malar area in butterfly distribution
 - Frequently affects areas of facial hair distribution



Figure 2.3 Seborrhoeic dermatitis affecting both nasal folds.

- Periorcular
 - Blepharitis, free margin redness
 - Yellow crusting between lashes
 - Can occur in isolation/part of larger distribution
- Trunk (five distinct patterns of distribution)
 - **Moist, skin-contact regions:** axillae, inframammary folds, umbilicus, genitocrural
 - **Petaloid pattern:** fine, scaling plaques over sternum/interscapular
 - **Annular/arcuate:** round, scaly plaques, may have hypopigmented central clearing
 - **Pityriasiform pattern:** mimics pityriasis rosea, 5–15mm oval, scaly lesions along lines of skin tension
 - **Psoriasiform pattern:** large, rounded erythematous plaques with thick scales

DIAGNOSIS

OTHER DIAGNOSTICS

- History, appearance, distribution

TREATMENT

MEDICATIONS

- Topical antifungals
- Antifungal shampoo
- Topical corticosteroids
- Topical calcineurin inhibitors
- Oral antifungals
- Antiandrogens
 - Reserved for individuals for whom feminization/male infertility is unproblematic
 - **Sexually-active, uterus-bearing people:** combine with contraception to avoid risk to fetus

OTHER INTERVENTIONS

- Cradle cap
 - Apply emollient (petroleum jelly, vegetable oil, baby oil) to scalp overnight to loosen scales → remove scales with soft toothbrush
 - Frequent shampooing with mild, non-medicated baby shampoo → remove scales with soft toothbrush
 - Extensive/persistent cases → medical therapy
- Topical
 - Coal tar shampoo/ointment